IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method of compensating motion prediction relative to each of a plurality of motion compensating blocks formed by dividing an objective frame image of successive frame images using a plurality of reference frame images, while sequentially changing pixel-based sizes of the plurality of motion compensating blocks, the method comprising:

thinning out pixels of a motion compensating block having a greatest pixel-based size to be taken as an uppermost layer of among blocks with smaller pixel-based sizes, each different pixel-based size of a block corresponding to a different layer of a frame image, to generate a size-reduced block in a lower layer having a predetermined size-reduction ratio;

determining motion vector search ranges respectively within the plurality of reference frame images based on a plurality of size-reduced reference images reduced in size corresponding to the size-reduction ratio of the size-reduced block by detecting motion vectors respectively within the plurality of size-reduced reference images and increasing a size of the motion vectors by linear interpolation to ~~determine~~ provide motion vector search ranges with respect to the plurality of reference frame images which correspond to an increased size of the motion vectors, wherein for each layer of a frame image except a lowermost layer, motion vectors are detected within a search range which includes a plurality of peripheral pixels in a rectangular range having apexes corresponding to start and end points of a motion vector detected in a lower layer; and

detecting an optimal motion vector while sequentially changing the pixel-based sizes of the plurality of motion compensating blocks by using each of the motion vector search ranges determined in the determining motion vector search ranges.

Claim 2 (Previously Presented): A method of compensating motion prediction according to claim 1, wherein the determining further includes determining the motion vector search ranges depending upon respective differences in pixel-based values from respective size-reduced reference images.

Claim 3 (Previously Presented): A method of compensating motion prediction according to claim 2, wherein the determining carries out block matching sequentially on the size-reduced reference images with the size-reduced block, so as to determine the motion vector search ranges on the basis of an absolute-value sum of a difference between a pixel-based value within the size-reduced block and a pixel-based value within a block corresponding to the size-reduced block within a predetermined size-reduced reference image.

Claim 4 (Previously Presented): A method of compensating motion prediction according to claim 3, wherein the determining further includes determining the motion vector search ranges depending upon an absolute-value sum of differences between a pixel value of every other pixel with respect to a horizontal direction and a vertical direction of the size-reduced block and a pixel-based value within a corresponding portion of pixel-based values within the size-reduced block.

Claim 5 (Previously Presented): A method of compensating motion prediction according to claim 3, wherein the determining further includes determining as one of the motion vector search ranges a peripheral pixel range including an enlarged lower layer motion vector enlarged from a lower layer motion vector between a corresponding portion of

pixels where an absolute-value sum of pixel-based values within the size-reduced block is minimum and the size-reduced block.

Claim 6 (Previously Presented): A method of compensating motion prediction according to claim 1, further comprising:

selecting only motion vector search ranges within the size-reduced reference images in which a difference of pixel-based values is minimized from the respective size-reduced blocks of among motion vector search ranges within the size-reduced reference images determined in the determining, wherein

the detecting further includes detecting an optimal motion vector by using only the motion vector search ranges within the size-reduced reference images selected in the selecting.

Claim 7 (Currently Amended): A method of compensating motion prediction according to claim 1, wherein:

the detecting an optimal motion vector further includes detecting the optimal motion vector depending on respective differences in pixel-based values between the size-reduced block and the size-reduced reference images, a quantizing scale function, and a generation code amount for [[the]] motion vector differences.

Claim 8 (Currently Amended): A method of compensating motion prediction according to claim 1, wherein the detecting an optimal motion vector further includes detecting an optimal motion vector based on a Rate Distortion optimization process.

Claim 9 (Currently Amended): A method of compensating motion prediction according to claim 1, wherein the detecting an optimal motion vector further includes sequentially changing the pixel-based sizes of the motion compensating blocks from a greater pixel-based size to a smaller pixel-based size, so as to size-reduce a motion vector search range each time a change is made.

Claim 10 (Currently Amended): An apparatus for compensating motion prediction relative to each of a plurality of motion compensating blocks formed by dividing an objective frame image of successive frame images using a plurality of reference frame images, while sequentially changing pixel-based sizes of the plurality of motion compensating blocks, the apparatus comprising:

hierarchizing means for thinning out pixels of a motion compensating block having a greatest pixel-based size to be taken as an uppermost layer of among blocks with smaller pixel-based sizes, each different pixel-based size of a block corresponding to a different layer of a frame image, to generate a size-reduced block in a lower layer having a predetermined size-reduction ratio;

search range determining means for determining motion vector search ranges respectively within the plurality of reference frame images based on a plurality of size-reduced reference images reduced in size corresponding to the size-reduction ratio of the size-reduced block by detecting motion vectors respectively within the plurality of size-reduced reference images and increasing a size of the motion vectors by linear interpolation to ~~determine~~ produce motion vector search ranges with respect to the plurality of reference frame images which correspond to an increased size of the motion vectors, wherein for each layer of a frame image except a lowermost layer, motion vectors are detected within a search

range which includes a plurality of peripheral pixels in a rectangular range having apexes corresponding to start and end points of a motion vector detected in a lower layer; and

detecting means for detecting an optimal motion vector while sequentially changing the pixel-based sizes of the plurality of motion compensating blocks by using the motion vector search ranges determined by the search range determining means.

Claim 11 (Currently Amended): An apparatus configured to compensate motion prediction relative to each of a plurality of motion compensating blocks formed by dividing an objective frame image of successive frame images using a plurality of reference frame images, while sequentially changing pixel-based sizes of the plurality of motion compensating blocks, the apparatus comprising:

a hierarchizing unit configured to thin out pixels of a motion compensating block having a greatest pixel-based size to be taken as an uppermost layer of among blocks with smaller pixel-based sizes, each different pixel-based size of a block corresponding to a different layer of a frame image, to generate a size-reduced block in a lower layer having a predetermined size-reduction ratio;

a search range determining unit configured to determine motion vector search ranges respectively within the plurality of reference frame images based on a plurality of size-reduced reference images reduced in size corresponding to the size-reduction ratio of the size-reduced block by detecting motion vectors respectively within the plurality of size-reduced reference images and increasing a size of the motion vectors by linear interpolation to ~~determine~~ produce motion vector search ranges with respect to the plurality of reference frame images which correspond to an increased size of the motion vectors, wherein for each layer of a frame image except a lowermost layer, motion vectors are detected within a search

range which includes a plurality of peripheral pixels in a rectangular range having apexes corresponding to start and end points of a motion vector detected in a lower layer; and

a detecting unit configured to detect an optimal motion vector while sequentially changing the pixel-based sizes of the plurality of motion compensating blocks by using the motion vector search ranges determined by the search range determining unit.